

学术报告会

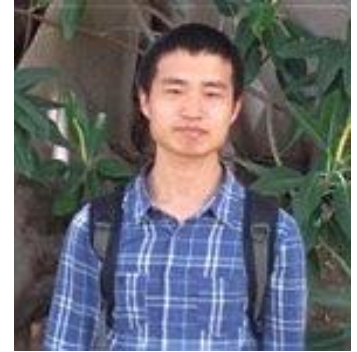
时间: 2017年6月23日(周五)10:30

地点: 电院群楼2-410会议室

Circular Formation Control of Multiple Constant-speed UAVs: Theory and Experiments

Dr. Zhiyong Sun (孙志勇)

**Networked Systems Group,
Research School of Engineering,
The Australian National University**



Abstract:

Formation control of networked multi-agent systems has attracted a lot of attention due to its growing applications in both military and civilian areas. In this talk we focus on a particular formation problem: coordination control of multiple UAVs with constant cruising speeds in a formation. This control problem has been posted to us by the Australian Defense Science and Technology Group in their practical use of such UAVs.

In this talk, we show how to design formation controllers to steer UAVs' orientations while the aim is to achieve a desired formation configuration for the UAV group subject to constant-speed constraints. We consider several different formation design approaches in achieving a target formation shape with stable circular motions via limited interactions. In the last part of the talk, we also show experimental verifications involving a group of fixed-wing UAVs to validate the performance of the proposed circular formation controllers.

Biography:

Zhiyong Sun received the B.E. degree from Nanjing Normal University, Nanjing, China, in 2009, and the M.E. degree from Xi'an Jiaotong University, Xi'an, China, in 2012, both in Electrical Engineering. He completed his Ph.D. (under the supervision of Prof. Brian Anderson) at The Australian National University (ANU), Canberra ACT, Australia in February 2017, while he is currently a Research Fellow at ANU. His research interests include graph rigidity theory, control of autonomous formations, cooperative control and multi-agent systems.

He received the **Australian Prime Minister's Endeavor Postgraduate Award** in 2013 from the Australian Government, and the Outstanding Oversea Student Award from the Chinese Government in 2016. He was a finalist of Best Student Paper (BSP) Award in the 54th IEEE Conference on Decision and Control (CDC 2015 at Osaka, Japan), a finalist of BSP Award in the 4th Australian Control Conference (AUCC 2014 at Canberra, Australia), and the winner of BSP Award in the 5th Australian Control Conference (AUCC 2015 at Gold Coast, Australia). He had been a visiting student/researcher of several universities, including Yale University (US), University of Wuerzburg (Germany), Purdue University (US), Groningen University (The Netherlands), GIST (South Korea), etc.